

Understanding the problems of mathematical economics:

A “continental” perspective

Wolfgang Drechsler [Tallinn University of Technology, Estonia]

© Copyright: Wolfgang Drechsler, 2011

You may post comments on this paper at

<http://rwer.wordpress.com/2011/03/11/rwer-issue-56/wolfgang-drechsler/>

1. Introduction

Within the heterodox and especially the post-autistic, real-world-focused critique of Standard Textbook Economics (STE), often published in this journal, attention to its literally fundamental method, quantitative-mathematical in general and mathematically modelling specifically, and how this method steers economics away from reality, is and has been almost inevitable. Just the last issue of this journal featured a lead article by Michael Hudson on “The use and abuse of mathematical economics” (2010) which kindly quoted my quip that “mathematics has helped enthrone irrelevance as methodology.” (5)

What generally informs even this critique, however – and not surprisingly so – is its intellectual and science-sociological rootedness in the Anglo-American discourse, in which specific questions must be addressed because they are considered, and thus are, relevant for and within that context. But while this discourse has globally won the day, at least for now, the insight that STE might be the economics precisely of that context, and thus that bowing to this context might not always produce the best results given the realist agenda, may make it helpful to look at an alternative discourse which may tackle the problems of the use of mathematics in a different, and even perhaps in a more immediate way.

1.1. Understanding and context

An obvious candidate for such an alternative discourse is the “Continental” (European) one, within which I would like to focus here on that particularly German tradition which we can call understanding-oriented (*verstehensorientiert*) or, more professionally and contemporarily, hermeneutical. In economics and the social sciences, this approach is part of the German Historical School of Economics (GHS), especially the younger (headed by Gustav von Schmoller) and youngest (headed by Werner Sombart, Max Weber’s antagonist and friend). In contemporary philosophy, it is mainly represented by the late Hans-Georg Gadamer, the father of philosophical hermeneutics, Heidegger’s most eminent student and one of the most important philosophers of the 20th century. That approach invariably and continuously connects back to two matrices of “Western” thought, Kantianism and Ancient Greece, i.e. Plato and Aristotle. In philosophy generally and also in epistemology specifically, hermeneutics and its larger context of “Continental Philosophy” is perhaps the most orthodox heterodoxy today, even within Anglo-American academe. It is certainly much more so than the GHS is in economics, where, in spite of continuous attempts at re-evaluation and resurrection (I only mention, for their work in English, Ha-Joon Chang, Geoffrey Hodgson, Erik S. Reinert and especially Jürgen G. Backhaus), it remains obscure.

In short, the GHS dominated economics in Germany and well beyond for the last few decades of the 19th and the first one or two of the 20th centuries, both academically and, since the 1890s, also in policy. Its

leading principles may be thus formulated: 1. It discards the exclusive use of the deductive method, and stresses the necessity of historical and statistical treatment. 2. It denies the existence of immutable laws in economics, calling attention to the interdependence of theories and institutions, and showing that different epochs or countries require different systems. 3. It disclaims belief in the beneficence of the absolute laissez-faire system; it maintains the close interrelation of law, ethics and economics; and it refuses to acknowledge the adequacy of a scientific explanation, based on the assumption of self-interest as the sole regulator of economic action. (Seligman 1925, 15-16)

Hermeneutics primarily goes back to Gadamer's 1960 *magnum opus Wahrheit und Methode* (1990), which essentially describes the possibility of understanding, via linguistic communication and within tradition-based and -mediated cultural contexts, between human beings in the form of a fusion of their horizons (*Horizontverschmelzung*). Gadamerian hermeneutics has had, and still has, a hardly overestimable effect on the entire humanities and some social sciences. I will try to explain the relevant aspects of *Wahrheit und Methode* as we go along; suffice it here to say that one of the points of "Truth and Method" is that one could form a juxtaposition, truth *or* method, method *or* truth, as opposed to the assumption that method actually produces truth, on which "empirical" social science is often based. (Lawn 2006 is, I think, the best introduction to Gadamerian hermeneutics available in English.)

Of course, this is only one part of the "Continental" perspective, which is neither cohesive nor homogeneous, neither stable over time nor entirely disentangleable from the Anglo-American one. And the hermeneutical narrative I will develop here itself is somewhat constructed, since I use a philosophy that came after the respective economics (though both do somewhat connect in Sombart). In fact, in what follows, I will try, not to trace the history of this thought, nor to compare or align it with the Anglo-American one, not even in its post-autistic aspect, but rather to add to the latter via another, additional line of reasoning. Relying heavily on some earlier writings of mine on the topic (especially Drechsler 2004, 2000b, also e.g. 2000a, 2000c), I will try to elucidate, if not to (re-)construct, jumping between the older economic and the younger philosophical discourse, based especially on Gadamer, Sombart, and the GHS economist Wilhelm Lexis, this specific argument of why mathematical modelling in economics and indeed the mathematical propensity which underwrites STE is just not a good idea.

It is not a good idea because STE necessarily leads to faulty results – and this is a problem because economics is not about economics but about the economy, so that it is not (only) an intellectual playground but matters greatly in human life and for human happiness. That, I take it, is the main melioristic angle of the post-autistic project, and the following argument is just intended to tell or remind those who agree with the basic premises why mathematics in economics cannot work from a slightly different than the usual perspective.

1.2. Some premises

"Let's assume" (to for once borrow that famous phrase from STE) then, with Kant, that there is a carryover from theory to practice (Kant 1992, 23-25), and that this matters for economics because the purpose of pursuing economic scholarship is not to create an aesthetically pleasing theoretical system, but rather to say something meaningful and consequential, directly or indirectly, about reality.

This, in turn, means that such a thing as reality must actually exist, which in philosophy (and some other humanities and social sciences) is by no means a given. Let us, thus, more or less safely define reality as Wittgenstein's "world", as "everything that is the case" (2003, 1), including options and myths as options and myths, rather than as all that exists. This means that "the world is significantly stratified independently of our interpretations of it" (Eagleton 1996, 35), but that our perceptions enter into it and become part of the world. Reality may thus be hidden and difficult if not impossible to ascertain, but if one has a concept or an idea, one can, as the Presocratic philosopher Xenophanes of Colophon says in a fragment that stands at the beginning of "Western" thought, "indeed accept this assumingly, as alike the real." (Diels and Kranz 1996, fragm. B 35) We can act as if we had the truth (truth in this context means congruence with that reality), as if we were right, so long as we remember that we might be wrong – as Aristotle put it, "not only he who is in luck but also he who offers a proof should remember that he is but a man." (*On the Good*, fragm. 27 in Aristotle 1886 = fragm. 1 in Aristotle 1952, 116-117) In that sense, only working hypotheses are possible, but they *are* possible.

The demand put to a theory is therefore that it mirror reality, muddy and messy as it may be, and the claim is that it can do so. In fact, if a theory does not mirror reality, it is untrue or wrong; if it cannot, it is self-referential. The question in consequence is, then, whether mathematical economics can and does mirror reality. It is argued here that neither is the case – because it is based on tools that misrepresent human interaction and therefore human life; because it does not and cannot make a difference between what can be measured in one way and what in another.

1.3. Natural and social sciences I

The Stranger: "Obviously, we will now divide the art of measuring into two parts, according to what has been explained: one part in which we put all arts which measure numbers, lengths, widths, depths, and speed against their contrary; as the other one all those who do it against the appropriate and decent and convenient and proper and all which has its place in the middle between two extreme ends." (Plato, *Politikos*, 284e)

It is for this reason that, try as we might, "The experience of the social-historical world cannot be lifted up to science by the inductive process of the natural sciences." (Gadamer 1990, 10) Natural sciences deal with objects, social ones with subjects, i.e. with human beings. This basic difference has a decisive impact on the transferability of concepts from one to the other. The reason for the problem of quantitative-mathematical social science is hence not, as is so often claimed, "bad maths"; not its abuse and possible mistakes, but the "thing in itself". Frank Knight's recommendation of 1935 seems therefore to be well-taken:

The first step to getting out of this slough, we suggest, is to recognize that man's relations with his fellow man are on a totally different footing from his relations with the objects of physical nature and to give up, except within recognized and rather narrow limits, the naïve project of carrying over a technique which has been successful in the one set of problems and using it to solve another set of a categorically different kind. (1935, 147)

But are these natural science fields really alien to the social science ones? If one should conceive of the social sciences as of something somehow “between” the natural sciences and the humanities, then the quantitative-mathematical kind has a very strong tendency towards the natural-sciences side, even to make any social science a natural one. It is this view which in 1874 Wilhelm Lexis spelt out as follows:

Right away, a certain analogy is noticeable which exists between the social and the natural sciences. The means of realization for the one as well as for the other is supposed to be experience. As the natural sciences are taken to be the specific empirical sciences, the temptation is close at hand to put the social sciences under the guidance of her older sister by directing to her the tried method of the latter. (1903, 235)

Lexis goes on to argue that in the (ideal) end of all natural-scientific explanation, there are the differential equations of dynamics, having as variables the coordinates of moving points in time and space. “If one envisions these equations in an integrated format, one receives a system of equations through which in any point in time the spatial situation of all points is determined.” This “world formula” approach, the “inductive concluding towards the future” (239), is still at the basis of much natural-scientific thinking in the social sciences – rather than in the natural sciences themselves – today.

The method of the natural sciences thus consists in its ideal execution in the objective assessment of phenomena in space and time, its cutting into basic facts and in the erection of a purely quantitative mathematical scheme for the meaning of the phenomena. Is now this method applicable for the matter of the social sciences, and if so, is the purely quantitative scheme, which can only express outside relations, sufficient for embodying the totality of our possible experiences in this area? (240)

Lexis says at this point that “The answer to the first question is yes; to the second one, no.” (240) However, the answer is even twice in the negative, which will now be explained.

2. Physics

The basis of natural science, its ideal, is then in the end “the purely mathematical concept of its subject in space and time, through which the *quality* of the phenomena is dissolved in *quantitative* determinations.” (Lexis 1903, 237-238) This is legitimate if one follows positivism, described by Ernst Mach as the conviction that “*quantitative* investigation is only a *particularly simple case of the qualitative one.*” (1926, 322)

The characteristic theses of positivism are that science is the only valid knowledge and facts the only possible objects of knowledge; that philosophy does not possess a method different from science; and that the task of philosophy is to find the general principles common to all the sciences and to use these principles as guides to human conduct and as the basis of social organization. Positivism, consequently, denies the existence or intelligibility of forces or substances that go beyond facts and the laws ascertained by science. (Abbagnano 1967, 414)

This is actually a handy view (positivism and modelling are beliefs that actually reduce the complexity of human existence, which is one of their most attractive features to many, especially graduate students), and still to be found in the faculty rooms of the social sciences and between the covers of their journals, but this, too, has long been recognized as wrong by its own principles and by its own protagonists in the natural sciences. (See only Heisenberg 1958, 167, 170) This is especially damning due to the proverbial “physics envy” of contemporary social science generally and economics in particular. The “predicament of neoclassical economics in the twentieth century that it has been obliged to acknowledge that physics itself has undergone some profound transformation since the consolidation of the energy concept,” that “the criteria of scientific success in the physicists’ camp have clearly changed,” and that “the question of the scientific character of economic theory cannot be understood without savouring the vulnerabilities of an aging social physics, surrounded by jeering scientific upstarts, and the responses of late neoclassical theory to meet the challenges,” has contemporarily been well, and probably best, explained by Philip Mirowski. (1995, 354-358, 386-388; quotes 358) One thus needs to add at this point only the problem of determinedness in two related respects, because so much hangs on this concept, as Lexis explained above.

The point, originally Kantian in our context, that “reality is the same as determinedness,” and that “determinedness only exists in those sciences which determine events or things in space and time” (Kautz 1990, 209; see Cassirer 1939, 59), is particularly well falsified, as if in two steps, by Ernst Cassirer and Hans-Georg Gadamer. First, as Cassirer demonstrates in his critique of the “first emotivist” Axel Hägerström – in the very useful paraphrase by Timothy Kautz – “determinedness is the result of an interaction, or a sum of interactions, which come into existence, or are kept, in a matrix of judgment. ‘Determinedness’ thus is precisely not a simple aggregate or a simple, given intuition but rather the result of (symbolic) mediation.” (213) And “determinedness never derives solely from the ‘things’ in space and time, just *because* they are in space and time: an apparent objectivity in the imagined placement of everything in a space-time system of coordinates is not a *sufficient* description of the world because it is precisely the kind of relation that remains undetermined.” (214) In other (simplifying) words, things are not determined in time and space, but at the very least, someone must determine them there – and, the world being what it is, tell at least some other person that this is so.

As importantly, as Hans-Georg Gadamer has stated, this focus on determinedness

outright defines the progress of realization which is achieved in the sciences. The world of physics, too, cannot at all want to be the whole of that what is. Even a world equation which would display all that is, so that even the observer of the system would appear in the equations of the system, would still require the physicist who as the calculating one is not the calculated. A physics that calculated itself and was its own calculation would remain a contradiction in itself. ... The being-as-such upon which its research is focused, be this physics or biology, is relative towards the *Seinssetzung* situated in its research program [*Fragestellung*]. Beyond that, there is not the slightest reason to give credit to the claim of physics that it could realize the being-as-such. As science, the one as well as the other has its object-area pre-designed, the realization of which signifies its mastery. (1990, 455-456)

So, in sum, reality is precisely not the same as determinedness, because there *is* no determinedness, but rather, someone does the determining. Thus, to argue for any science, let alone a social science, that is based on determinedness is perhaps scientific, but it is not scientific. There is no “pure” social science (at least as long as one wants to somehow refer to reality) already by the theory of the natural sciences, especially physics. The same point can be made, even more strongly perhaps, if we turn to that pure ideal of validity and truth, mathematics, and mathematic modelling and formalization in its economic application.

3. Mathematics

Neither is STE synonymous with mathematics, nor is mathematics synonymous with quantification (and also not with counting and calculation), but STE is very closely aligned with mathematics and especially modelling and formalization, which (apparently) lends it its theoretical credibility, to the point that what is not modelled and formalized is deemed, not only non-scientific, but not economics at all. If one does not play this game, one is out of it, literally, and economics jobs are difficult to get – STE, mainstream economics, is professionally largely defined as applied maths. The critique of this has always been quite strong, and against this opposition, Heinrich v. Stackelberg, in the preface to his book that played a key role in the re-mainstreaming and thus mathematizing of German economics after and even during World War II and the final demise of the GHS, *Grundlagen der theoretischen Volkswirtschaftslehre*, says, nicely summing up the critique and the defence line:

It is also stated that mathematics would fake an exactness and rigidity of economic relations which in reality would be flowing and inexact; it would fake necessities of natural-science laws where in reality the human will would be able to decide and shape freely. ... This view completely mistakes the role of mathematics in economic theory. How often has it been said from the expert side that “there never jumps more out of the mathematical pot than has been put into it before”! Mathematical symbolics changes neither the preconditions nor the results of the theoretician, as long as they are conclusive. (Stackelberg 1951, x-xi)

This defence is wrong in all of its points, and as these are the key objects of the present critique, they will be addressed one by one below.

3.1. Mathematization and truth

First, in the everyday academic discourse, mathematization *is* taken to somehow “guarantee truth” – it becomes more than a tool, it becomes a safety-foundation of an almost mythical nature. (See only Kenessey 1995, 304-305) But it is wrong to see mathematics as “guaranteeing truth,” since, as Einstein pointed out, “Insofar as the statements of mathematics refer to reality, they are not certain, and insofar as they are certain, they do not refer to reality.” (1970, 119-120) Wittgenstein put the same point thus: “All mathematical propositions mean the same thing, namely nothing.” (Quoted in Heath 1974, 25 n. 5 (as “the remark attributed to Wittgenstein”)) Or, again Einstein: “mathematics as such is incapable of saying anything about ... things of reality.” (1970, 120-121)

Once just one variable, i.e. one symbol for something, is introduced, the gates for definition, representation, conception, and language problems are opened – i.e. for problems of language and philosophy. And this is inevitable, for “one cannot want to look into the world of language ... from above. Because there is no position outside of the linguistic world-experience from which the latter itself could possibly become an object.” (Gadamer 1990, 456) “The objectivizing science thus experiences the linguistic being-formed of the natural world-experience as a source of pre-judices.” (457) And this means that even current highly sophisticated and complex ventures into new, “higher” “forms” of mathematics that try to encapsulate uncertainties and variabilities fall prey to this point as well, because they still try to “count in” the world which, however, sets the framework for those ventures as well.

In short, mathematical modelling, or formalization, does not add truth-value to any economic statement that is connected to some form of reality, because reality is brought into the formula by variables which are definable only linguistically, and that means in an extra-mathematical way, which in turn invalidates any automatic “truth-connex” of the equation. (Hence, mathematical formalization must either deny this or claim that reality does not exist or is just not interesting for economics – and all those defence mechanisms are actually applied.)

3.2. Mathematization and connection

Second, a mathematical connection, contrary to what Stackelberg claims, is not simply a logical one either, as soon as it steps outside of any pure mathematics. Although the mathematics of economics Stackelberg refers to is quite different from that of Lexis', let alone today's, Lexis addresses a still-valid point when he explains,

Scientific thinking ... consists in the connecting of terms according to certain general basic relations. These connections at first only have a logical significance. However, as every empirical science wants to recognize the real connection of the phenomena which are in front of it, at a certain point it has to give to the merely logical connections also a real significance for the relations of the things themselves. (1903, 236)

Therefore, mathematics as a connection of the objects under investigation not only does not add any certainty to the statement, but it might be easily yet erroneously taken as the real kind of connection between the objects. (see Mises 1942, 243-245).

This is not quite the same as the previous point, which argued that in $x + x = 2x$; the existence of x was the problem because x is to be defined non-mathematically and only $1 + 1 = 2$ has the certainty that is desired. But mathematics also charges the meaning of “+”, which comes, just like “-”, “÷” etc., with specific ideas and concepts of how things are related. But what does “and” mean if goods, or people, or family, or countries, or incomes are put together – and how? The old simple example of both points (I unfortunately do not recall where this is from) says that $x + x = 2x$ only if x is defined as x (i.e. as nothing, not connected to any real object), but assume that x are humans and $x + x$ is partnership, then $x + x = 2x$, or $x + x = x + x$, or $x + x = x$ (a very romantic thought), or $x + x = 3x$, or $4x$, This is a very simple and not quite accurate illustration, but it does illustrate that if we mirror the real connection of things with simple signs of connection, let alone of people, we will think of this connection as the

logical-mathematical one and not as the real one, and again, some reality is lost, perhaps crucially so.

3.3. Mathematization and objects

The previous point leads again back to the first one and to the problem with x , to a further pitfall regarding objects and how one sees them, and this is that the mathematical connection invariably tempts its executors into the abstraction and definition of the objects under review away from how and what they really are. This is already so in physics:

scientific concepts are idealizations; they are derived from experience obtained by refined experimental tools, and are precisely defined through axioms and definitions. Only through these precise definitions is it possible to connect the concepts with a mathematical scheme and to derive mathematically the infinite variety of possible phenomena in this field. But through this process of idealization and precise definition the immediate connection with reality is lost. (Heisenberg 1958, 171)

In Gottlob Frege's anti-Schubert booklet – and Frege is the fairly sacrosanct founding father of mathematical logic – we find the same thought, if used for an altogether different purpose, well expressed by the description of the “method to make disturbing qualities disappear by disregarding them.” (1899, vi; see 4-12) If we mind, Frege says, “that the colour of the leaves of a tree is green, so we disregard it, and at once they are colourless.” (4) This is one of the problems with counting: In the end, one could only count what is the same, but as things that are exactly the same are self-identical, there would be nothing to count. (8) Hence, we create sameness and calculate away, but once again, the reality-connection is lost.

3.4. Mathematization and the change of reality

But does mathematization do any harm? It is un-realistic, it changes our image of things and connections, but surely then it cannot have an impact? Actually, the opposite is the case, as mathematization can even change the real world – and in this sense it would be realistic, but in the sense of reality-creating. How mathematization leads to another world view and thus, recalling Wittgenstein, another world may be demonstrated with a classic example, the reduction of things to money, i.e. the possibility of accounting and thus quantification. Werner Sombart makes the point brilliantly in his famous passage of double-entry accounting as the very basis of capitalism. (1916, 118-123) He says that double-entry accounting “is based on the consequentially pursued basic thought to grasp all phenomena only in quantities, the *basic thought, thus, of quantification*” (119), and that it leads to the fundamental separation of supply and gain. (119-120) Everything must be in the books; everything that can be in the books must be expressed in money; money is displayed in numbers, “*also heißt wirtschaften Rechnen.*” (120-121) This, in turn, leads to objectification and the mechanization of the accounting (122), and from here we go into a different world than before, one in which only counts what can be counted and put into the books – a world, to recall Plato, of which half of the reality is missing, and perhaps the more important one.

If this argument were only about science as such, and if “science is what recognized scientists recognize as science” (Marquard 1989, 199), all this would be no problem at all. But if we want to avoid self-referentiality and rather look for the reality and the real economy, and not for what is convenient or easy or cosy – and if we want to be genuinely practical in the long run – then we need to follow Plato’s division of the two kinds of measuring, and we need to accept that qualitative is not a complex form of quantitative, but rather something else.

From here, the argument goes on. It is, I would say, our task in economics and the social sciences to deliberate about whether this calculated world is a better one, difficult and tedious as this deliberation may be, particularly if one wants to draw conclusions and maybe even implement them. The question is what life we as human beings, in the context of structured living-together in time and space, want to live, and whether quantitative-mathematical thinking and its truth claim actually make a better or a worse world. I will in the end come back to the question of whether it might not be that it is also precisely for this reason that STE is promoted by those who want to have the world stay exactly as it is.

4. Natural and social sciences II

Let us now briefly go back to *Wahrheit und Methode* and to one of the initial arguments of this essay: the natural-science attempt to monopolize the truth, so successfully done, is a reversal of the real situation. The importance of Gadamerian hermeneutics for the social sciences is implied in G.B. Madison’s reminder that “the universality of Hermeneutics is based solely on the hermeneutical *fact* that ... what makes human beings ‘human’ is their ‘linguisticity’.” (1997, 360) On the basis of this fact, we can perhaps say that the dichotomy of *Verstehen* and *Erklären*, of understanding and explaining, of natural sciences on the one side and the humanities *and social sciences* on the other, evaporates in *Wahrheit und Methode* in the sense that the former become subsidiary to the latter.

To understand is not less or less scientific than to assess from the outside, as in the natural science world; but it is more or more so. Werner Sombart has put this very well, in terms quite similar to the thesis of *Wahrheit und Methode*: The natural sciences’ successful attempt to monopolise the truth is a reversal of the real situation. “‘True’ realisation reaches as far as we ‘understand’, that is, it is limited to the area of culture and fails towards nature.” (Sombart 1956b, 9) As the German philosopher Nicolai Hartmann put it, “‘Only ‘meaning’ can be ‘understood’ as well as all that which is related to it: value, goal, significance.” (Hartmann 1951, 33; see also 64-76). And Sombart: “Realisation that wants to arrive at the being of nature is metaphysics.” (1956c, 75) This means that although we cannot talk very meaningfully about things in biology and physics, the situation in “the social sciences is completely different: here, our realisation is capable of immediate penetration of the inner causal connection of the outer phenomena.” (Lexis 1903, 242-243) It does not mean, of course, that understanding inevitably leads to the truth, but it means that there is a chance that it does, or might. Gadamer’s student and colleague Hans Jonas expressed it thus:

As far as the so-called “understanding” is concerned, the mode of realisation of the humanities, it is evident that a “personal experiencing”, as a feeling-into the matter which in itself is a result of experience, belongs in the realisation inseparably from the beginning to the end, that is, until its result, and that it permeates the entire exegesis. (1987, 9)

So, while we certainly can create abstract systems and have fun with them, if we do not see the context of the life-world within which social matter happens, happening as it does between human persons and in the world in which we live and to which we cannot hope to gain a bird's eye view because we and our arguments are part of it, then what we say will remain self-referential.

5. Beyond mathematics: Whither economics?

Is there nonetheless a chance for the quantitative-mathematical kind to do economics? Yes, if we utilize its mythical or almost-mythical dimensions as described. It is unreal or even irreal if it is not treated as such. Myth, in this context, is not meant to sound derogatory: As Friedrich Georg Jünger in his seminal work on Ancient Greek myths explains, the cliché of science, or abstract or free thinking emerging from and moving away from the myth as an explanatory basis, is not wrong – however, once the former leaves the latter completely, it collapses as well, for as basis, it is necessary. (1947, 7-8) In other words, the reality of quantitative-mathematical social science necessarily encompasses its mythical characteristics. Here, in the world of myth, we might have the chance to productively use STE again, viz. as a myth as well, a story – one that certainly does not depict, explain, or even deal with reality, which is too complex for that, but one that as one story can give us some sort of handle on, some insight in one facet of, the problem at hand.

How to go on, however, in concrete economic research terms, especially in light of the practical tasks economics has to fulfil? This question leads us to a look at normativity again. Its re-inclusion into the social sciences would be a return to the Greeks, at least in perspective – and specifically to the Greeks, and especially Aristotle, as seen by the GHS and by hermeneutics. And here, understanding and normativity are linked in a way as to produce a possible, meaningful, truth-focused approach: “The Aristotelian program of a practical science seems ... to be the only science-theoretical model according to which the ‘understanding’ sciences can be thought.” (Gadamer 1977, 87)

Habermas objected that Hermeneutics could have a future only if *phronésis*, Aristotle's practical knowledge to which I appealed, became science. I responded with the reverse claim: only if science were to be subordinated to *phronésis* could it fulfill the task of the future. ... Wherever methods are being employed their correct application is not specified by a method but demands our own judgement. This is a profound commonality of reason itself. It testifies to the depth in which linguisticality is rooted in human life. All methods require judgement and linguistic instruction. (Gadamer 1997b, 366-367)

Therefore, the problem of the two kinds of measuring, i.e. the reminder that the qualitative is not a complex form of the quantitative, but *etwas ganz anderes*, something completely different, might for the social sciences, where human beings are concerned, be solved by Aristotle himself, who says that “the good is the most accurate measure of all things.” (*Politikos*, fragm. 79 in 1886 = fragm. 2 in 1952, 68)

For economics specifically, this results, again, in the confirmation that STE cannot become and is not real-world economics because not only does it not deliver, but methodologically it cannot deliver, because its apparatus shifts both attention and “truth-value” away from the truth in the sense of congruence with reality, and its incentives are so

placed as to be un-realistic. (You get hired, published, or promoted for devising a well-working model, not for being right forecasting, not even in retrospect.) That is what I mean when I say that STE has elevated irrelevance to method – and, the other way round, its method is bound to result in irrelevance.

And yet, again, even that is only correct on the first level – on one beyond, a second tier of reality is created because of those assumptions; tendentially a mechanistic world without values in the classical, positive sense of the word, indeed without the human dimension. It may well be that many of the STE protagonists do not see it this way – most STE economists really do seem to believe that they are doing good science, often even that they do deliver relevant economics. Nonetheless, we may just almost end with the observation that those who promote STE and those who profit from a kind of economics that cannot ask the real questions concerning the real world may form an alliance that is more than just accidental.

In 1897, Gustav von Schmoller served as Rector of the University of Berlin, then arguably the best university in existence. In his inaugural address, he narrated the story of how the GHS has become standard (and textbook) economics, conscious of his school's accomplishments, but in hindsight, we know that these words were almost the epitaph of the GHS. Nonetheless, I think his words describe very well what could be (again), and why the demise of STE would be so important:

Thus, a mere science of market and exchange, a sort of business economics which threatened to become a class weapon of the property owners, returned to being a great moral-political science which examines both the production and the distribution of goods, as well as both value and economic institutions, and which has its central focus not on the world of goods and capital but on the human person. (1904, 388)

As James Buchan has said about today's situation, "Though the economists had manifestly failed to find their gravity, they proceeded as if they had. They became like drunkards who have lost their house-keys, and search under the street-lamp, not because the keys are there, but because the street-lamp casts a faint artificial light." (1997, 180) It seems to me that to give up the imagined, yet potentially life-damaging, and certainly world-changing "accuracy" of STE in favour of an approach in economics that *prima facie* looks less scientific but is actually more so by being more realistic and thus also more relevant for human life and happiness, is a price that is not very high at all – neither in theory, nor in practice.

Acknowledgments

Helpful comments on this essay by Rainer Kattel, Timothy J. Kautz, Benjamin Merkler and Johannes Schmidt, and on its language by Ingbert Edenhofer, as well as the discussion of the topic in my Fall Term 2010/11 course on the GHS in the Technology Governance programme at Tallinn University of Technology, are gratefully acknowledged, as is funding from the Estonian Science Foundation (grant no. 8571).

References

- Abbagnano, Nicola (1967), "Positivism", In *The Encyclopedia of Philosophy*, ed. Paul Edwards, Vol. 6 (New York / London: Macmillan / Collier Macmillan): 414-419.
- Aristotle (1886), *Aristotelis qui ferebantur librorum fragmenta*, ed. Valentin Rose (Leipzig: Teubner).
- Aristotle (1952), *The works of Aristotle*, ed. Sir David Ross, Vol. 12: *Select fragments* (Oxford: Oxford University Press).
- Buchan, James (1997), *Frozen Desire. the meaning of money* (New York: Farrar, Straus & Giroux).
- Cassirer, Ernst (1939), "Axel Hägerström. Eine Studie zur schwedischen Philosophie der Gegenwart", *Göteborgs Högskolas Årsskrift* 45 (1): 1-120.
- Diels, Hermann and Walther Kranz (eds) (1996), *Die Fragmente der Vorsokratiker*, Vol. 1, 19th edn (Zürich: Weidmann).
- Drechsler, Wolfgang (2000a), "Zu Werner Sombarts Theorie der Soziologie und zu seiner Biographie", in *Werner Sombart (1863-1941): Klassiker der Sozialwissenschaft. Eine kritische Bestandsaufnahme*, ed. Jürgen Backhaus (Marburg: Metropolis): 83-100.
- Drechsler, Wolfgang (2000b), "On the possibility of quantitative-mathematical social science, chiefly economics: Some preliminary considerations", *Journal of Economic Studies* 27 (4/5): 246-259.
- Drechsler, Wolfgang (2000c), "Money as Myth and Reality", in *Georg Simmel's Philosophy of Money: A Centenary Appraisal*, ed. Jürgen G. Backhaus and Hans-Joachim Stadermann (Marburg: Metropolis): 33-45.
- Drechsler, Wolfgang (2004), "Natural vs. Social Sciences: On Understanding in Economics", in *Globalization, Economic Development and Inequality. An Alternative Perspective*, ed. Erik S. Reinert (Cheltenham – Northampton, MA.: Elgar): 71-87.
- Eagleton, Terry (1996), *The illusions of postmodernism* (Oxford: Blackwell).
- Einstein, Albert (1970), "Geometrie und Erfahrung", in *Mein Weltbild*, (Frankfurt/Main etc.: Ullstein): 119-127.
- Frege, Gottlob (1899), *Ueber die Zahlen des Herrn H. Schubert*, repr. 1999 in *Zwei Schriften zur Arithmetik*, ed. W. Kienzler (Hildesheim – Zürich – New York: Olms).
- Gadamer, Hans-Georg (1977), "Hans-Georg Gadamer", in *Philosophie in Selbstdarstellungen*, ed. Ludwig J. Pongratz, Vol. 3 (Hamburg: Meiner): 60-101.
- Gadamer, Hans-Georg (1990), *Wahrheit und Methode. Grundzüge einer philosophischen Hermeneutik, Hermeneutik*, Vol. 1 = *Gesammelte Werke*, Vol. 1, 6th edn (Tübingen: Mohr/Siebeck).
- Gadamer, Hans-Georg (1997a), *The Philosophy of Hans-Georg Gadamer*, *The Library of Living Philosophers*, ed. Lewis Edwin Hahn, Vol. XXIV (Chicago – La Salle, IL: Open Court).
- Gadamer, Hans-Georg (1997b), "Reply to G.B. Madison", in *Gadamer 1997a*: 366-367.
- Hartmann, Nicolai (1951), *Teleologisches Denken* (Berlin: de Gruyter).
- Heath, Peter (1974), *The Philosopher's Alice* (New York: St. Martin's Press).
- Heisenberg, Werner (1958), *Physics and Philosophy. The Revolution in Modern Science* (London: Allen & Unwin).
- Hudson, Michael (2010), "The use and abuse of mathematical economics", *real-world economics review* 55: 2-22.
- Jonas, Hans (1987), "Wissenschaft als persönliches Erlebnis", in *Wissenschaft als persönliches Erlebnis* (Göttingen: Vandenhoeck & Ruprecht): 7-31.
- Jünger, Friedrich Georg (1947), *Griechische Mythen* (Frankfurt/Main: Klostermann).
- Kant, Immanuel (1992), *Über den Gemeinspruch: Das mag in der Theorie richtig sein, taugt aber nicht für die Praxis*, 5th edn (Frankfurt/Main: Klostermann).
- Kautz, Timothy (1990), *Ernst Cassirer und die Ethik: Eine Studie zur Philosophie der symbolischen Formen*, PhD thesis, University of Düsseldorf (Darmstadt: Dissertations Druck Darmstadt).
- Kenessey, Zoltan E. (1995), "The Emergence of Quantitative Thinking about Mortality and Life Expectancy", *International Review of Comparative Public Policy* 6: 291-311.
- Knight, Frank H. (1935), "The limitations of scientific method in economics", in *The ethics of competition and other essays* (London: Allen & Unwin): 105-147.
- Lawn, Chris (2006), *Gadamer: A Guide for the Perplexed* (London – New York: Continuum).
- Lexis, Wilhelm (1903), "Naturwissenschaft und Sozialwissenschaft", in *Abhandlungen zur Theorie der Bevölkerungs- und Moralstatistik* (Jena: Gustav Fischer).

- Mach, Ernst (1926), "Zahl und Maß", in *Erkenntnis und Irrtum: Skizzen zur Psychologie der Forschung*, 5th (≈ 4th) edn, repr. 1980 (Darmstadt: Wissenschaftliche Buchgesellschaft): 320-336.
- Madison, G.B. (1997), "Hermeneutics' Claim to Universality", in *Gadamer 1997a*: 350-365.
- Marquard, Odo (1989), "Über die Unvermeidlichkeit der Geisteswissenschaften", in *Hochschulautonomie, Privileg und Verpflichtung*, ed. Westdeutsche Rektorenkonferenz (Hildesheim: Lax): 193-203.
- Mirowski, Paul (1995), *More Heat than Light. Economics as Social Physics, Physics as Nature's Economics*, repr. of the paperback edn (Cambridge: Cambridge University Press).
- Mises, Ludwig [v.] (1942), "Social Science and Natural Science", *Journal of Social Philosophy & Jurisprudence* 7 (3): 240-253.
- Schmoller, Gustav (1904), "Wechselnde Theorien und feststehende Wahrheiten im Gebiete der Staats- und Sozialwissenschaften und die heutige deutsche Volkswirtschaftslehre", in *Über einige Grundfragen der Socialpolitik und der Volkswirtschaftslehre*, 2nd edn (Leipzig: Duncker & Humblot): 365-393.
- Seligman, Edwin A. (1925), *Essays in Economics* (New York: Macmillan).
- Sombart, Werner (1916), *Der moderne Kapitalismus. Historisch-systematische Darstellung des gesamteuropäischen Wirtschaftslebens von seinen Anfängen bis zur Gegenwart*, Vol. 2, pt. 1: *Das europäische Wirtschaftsleben im Zeitalter der Frühkapitalismus, vornehmlich im 16., 17. und 18. Jahrhundert*, 2nd repr. of the 2nd edn. 1987 (München: Deutscher Taschenbuch Verlag).
- Sombart, Werner (1956a), *Noo-Soziologie* (Berlin: Duncker & Humblot).
- Sombart, Werner (1956b), "Soziologie: Ein Vorwort", in 1956a: 1-12.
- Sombart, Werner (1956c), "Das Verstehen", in 1956a: 75–93.
- Stackelberg, Heinrich v. (1951), "Vorwort zur ersten Auflage", in *Grundlagen der theoretischen Volkswirtschaftslehre*, 2nd edn (Tübingen / Zürich: Mohr/Siebeck / Polygraphischer Verlag): vii-ix.
- Wittgenstein, Ludwig (2003), *Tractatus logico-philosophicus, Logisch-philosophische Abhandlung* (Frankfurt/Main: Suhrkamp).

Author e-mail: wolfgang.drechsler@ttu.edu

SUGGESTED CITATION: Wolfgang Drechsler, "Understanding the problems of mathematical economics: A 'continental' perspective", *real-world economics review*, issue no. 55, March 11, 2011, pp. 45-57, <http://www.paecon.net/PAERReview/Drechsler56.htm/>

You may post comments on this paper at

<http://rwer.wordpress.com/2011/03/11/rwer-issue-56/wolfgang-drechsler/>